MASTER-BILT®

Refrigeration Solutions

BLG-12_BLG/TLG 27, 48, 52, 74, 80

Installation & Operations Manual

Master-Bilt Products
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INTRODUCTION

Thank you for purchasing a Master-Bilt cabinet. This manual contains important instructions for installing, using, and servicing a Master-Bilt **BLG/TLG** case. A parts list is included with this manual. Read all these documents carefully before installing or servicing your equipment.

STORE CONDITIONS

The Master-Bilt **BLG/TLG** cases are designed to operate in the controlled environment of an air-conditioned store. The store temperature should be at or below 75°F and a relative humidity of 55% or less. At higher temperature or humidity conditions, the performance of these cases may be affected and the capacity diminished.

The Master-Bilt **BLG/TLG** should not be positioned where it is directly exposed to rays of sun or near a direct source of radiant heat or airflow. This will adversely affect the case and will result in poor performance.

If this case is to be located against a wall, there should be at least 6" space between the wall and the back of the case. This space will allow for the circulation of air behind the case, which will prevent condensation on the exterior surfaces.

NOTICE

Read this manual before installing your cabinet. Keep the manual and refer to it before doing any service on the equipment. Failure to do so could result in personal injury or damage to the cabinet.

DANGER

Improper or faulty hook-up of electrical components on the refrigeration units can result in severe injury or death.

All electrical wiring hook-ups must be done in accordance with all applicable local, regional or national standards.

NOTICE

Installation and service of the refrigeration and electrical components of the cabinet must be performed by a refrigeration mechanic and/or a licensed electrician.

The portions of this manual covering refrigeration and electrical components contain technical instructions intended only for persons qualified to perform refrigeration and electrical work.
This manual cannot cover every installation, use or service situation. If you need additional information, call or write us:

Customer Service Department
Master-Bilt Products
Highway 15 North
New Albany, MS 38652
Phone (800) 684-8988
Fax (800) 684-8988

WARNING LABELS AND SAFETY INSTRUCTIONS

This symbol is the safety-alert symbol. When you see this symbol on your cabinet or in this manual, be alert to the potential for personal injury or damage to your equipment.

Be sure you understand all safety messages and always follow recommended precautions and safe operating practices.

NOTICE TO EMPLOYERS

You must make sure that everyone who installs, uses or services your cabinet is thoroughly familiar with all safety information and procedures.

Important safety information is presented in this section and throughout the manual. The following signal words are used in the warnings and safety messages:

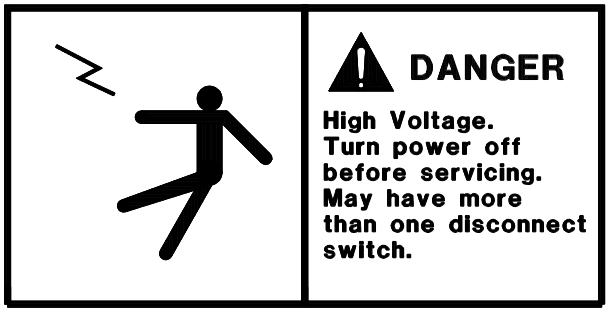
DANGER: Severe injury or death will occur if you ignore the message.

WARNING: Severe injury or death can occur if you ignore the message.

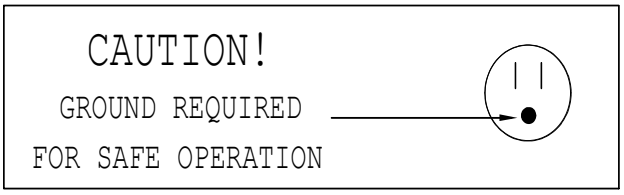
CAUTION: Minor injury or damage to your cabinet can occur if you ignore the message.

NOTICE: This is important installation, operation or service information. If you ignore the message, you may damage your cabinet.

The warning and safety labels shown throughout this manual are placed on your Master-Bilt Products cabinet at the factory. Follow all warning label instructions. If any warning or safety labels become lost or damaged, call your customer service department at (800) 684-8988 for replacements.



This label is located on top of the electrical control label and on the wiring channel.



This label is attached to the cabinet power cord on models with a power cord.

PRE-INSTALLATION INSTRUCTIONS

INSPECTION FOR SHIPPING DAMAGE

You are responsible for filing all freight claims with the delivering truck line. Inspect all cartons and crates for damage as soon as they arrive. If damage is noted to shipping crates or cartons or if a shortage is found, note this on the bill of lading (all copies) prior to signing.

If damage is discovered when the cabinet is uncrated, immediately call the delivering truck line and follow up the call with a written report indicating concealed damage to your shipment. Ask for an immediate inspection of your concealed damage item. Crating material must be retained to show the inspector from the truck line.

INSTALLATION INSTRUCTIONS

GENERAL INSTRUCTIONS

1. Be sure the equipment is properly installed by competent service people.

2. Keep the equipment clean and sanitary so it will meet your local sanitation codes. Clean the cabinet with a mild detergent and water, then rinse.

3. Rotate your stock so that older stock does not accumulate. This is especially important for ice cream. A "First-In, First-Out" rotation practice will keep the products in good salable condition.

4. Do not place product in the case when it is soft or partially thawed. Also, product should not be put in the case for at least 6 hours after it is started.

5. Stock cases as quickly as possible, exposing only small quantities to store temperatures for short periods of time.

6. When replacing burned out fluorescent tubes, be sure that the electrical power to the lighting circuit is turned off.

NOTICE TO STORE OWNERS / MANAGERS

Moisture or liquid around or under the cabinet is a potential slip/fall hazard for persons walking by or working in the general area of the cabinet. Any cabinet malfunction or housekeeping problem that creates a slip/fall hazard around or under the cabinet should be corrected immediately.

If moisture or liquid is observed around or under a Master-Bilt cabinet, an immediate investigation should be made by qualified personnel to determine the source of the moisture or liquid. The investigation should determine if the cabinet is malfunctioning or if there is a drainpipe leaking.

MECHANICAL

Remove front grille and check refrigeration lines to see that they are free (not touching each other or compressor). Spin condenser fan blade to see that it is free.

Remove cabinet from crate base and slide into location. Cabinet must be level from side to side and front to back for correct draining of coil pan and for self-closing doors to operate correctly. Allow minimum of 6” between back of cabinet and wall and between top of cabinet and ceiling for proper condensing unit air circulation.

To comply with Sanitation requirements the cabinet must be mounted on legs (6” high min.) or casters or the base must be sealed to the floor (BLG) with an N.S.F. listed silicone sealant.

ELECTRICAL

WARNING

Before servicing electrical components in the case or the doors or door frames make sure all power to case is off. Always use a qualified technician.

Check voltage and amps drawn on (Page 17-20) to determine proper line and fuse or circuit breaker size. Check power supply for low voltage. If voltage reads “230” with no load, and it drops below “207” when the compressor tries to start, it is an indication of too small supply wiring or too long to run.

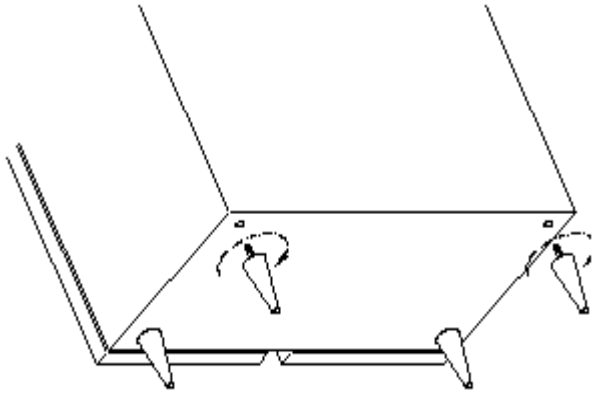
It is recommended that a separate circuit be run for each cabinet to prevent another appliance blowing the fuse or breaker, causing loss of product.

IMPORTANT

Models (2 and 3 door low temp) are pre-wired internally with a 208-230V NEMA L14-20P plug and should only be plugged into a NEMA L14-20P recepticle. See wiring diagrams on page 19-21. The cabinet should be grounded.

LEG AND CONDENSATE PAN INSTALLATION FOR TOP MOUNT CABINETS ONLY

1. Screw legs into existing crate mounting holes.
2. Before moving cabinet into place, remove the condensate pan from the top unit compartment.
3. Using the two screws supplied with the pan, attach the pan to the back of the cabinet at the two holes near the bottom of the plastic drain line. Be sure pan is NOT located directly under cabinet. When the pan is attached, feeds drain line into the open hole in screen and clamp the heater conduit to the back of the cabinet. Due to this condensate pan, this case must be a minimum of 6” from the wall.
4. If cabinet must be located next to wall, the pan can be located under the cabinet. When this is done, steam will accumulate on the bottom of the cabinet if there is not adequate ventilation, and rusting of the bottom of the cabinet
will occur.



DOORS

The **BLG/TLG** cabinets have Anthony glass doors that are equipped with a patented TorqueMaster™ hinge system. The doors are easily adjusted using a flathead screwdriver (Fig.3).

* ***The tension needs to be checked and set when first install.***

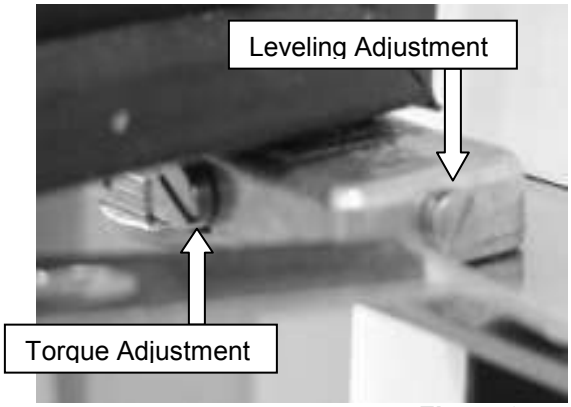
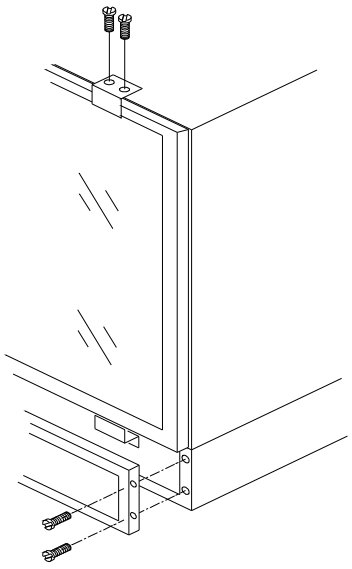


Figure 3

To remove the door shipping clamps, remove the 4 shipping screws from the grill and remove the screws from the clamps (Fig.4), and replace grill.

Figure 4



MASTER-BILT ELECTRONIC REFRIGERATION CONTROL

DESCRIPTION

Fig.1 — Front panel

i Info / Setpoint button.

Manual defrost / Decrease button.

INDICATIONS

Thermostat output

Fan output

RL3 Auxiliary output

II° Activation of 2nd parameter set

Alarm

▲M Increase / manual activation button.

Exit / Stand-by button.

OPERATION

DISPLAY

During normal operation, the display shows either the temperature measured or one of the following indications:

DEF	Defrost in progress	**HI**	Room high temperature alarm
REC	Recovery after defrost	**LO**	Room low temperature alarm
OFF	Controller in stand-by	**E1**	Probe T1 failure
CL	Condenser clean warning	**E2**	Probe T2 failure
DO	Door open alarm		

INFO MENU

The information available in this menu is:

T1	Instant probe 1 temperature	**TLO**	Minimum probe 1 temperature recorded
T2	Instant probe 2 temperature	**CND**	Compressor working weeks
THI	Maximum probe 1 temperature recorded	**LOC**	Keypad state lock

Compressor When power is first turned on the controller will go through the start-up. After the start-up delay the compressor comes on. The LED indicator stays on while compressor relay is energized. Display will show actual box temperature. Picture above is the display layout. The compressor will be cycled off when the actual box temperature reaches its set point. The COMP indicator will be off..

Fan The fans will run constantly except when a defrost is initiated, or when the evaporator temp is above the 30°F. When in defrost mode the fan is off until the end of the defrost and the 2 minute drip time has passed. There is 2 minutes delay after a defrost before the fan comes on. If the Evaporator temperature is 35 °F or below the controller will override the fan delay. FAN LED indicator is on while FAN relay is energized.

Defrost The control uses time defrost with 4 defrost per day. The defrost scheme can be re-set the for special applications. During defrost the display will show dEF and the defrost LED indicator on. The control begins timing the defrost when power is turned on. Four defrost per day means it will occur every 6 hours. To have defrost occur at 8am, 2pm, 8pm, and 2am then power up at one of these four times.

MANUAL DEFROST

Defrosting my also be induced manually by keeping the defrost button for 3 seconds. Once defrost has started, the defrost will go through a defrost and drip time pull down cycle.

HOW TO CHANGE THE SETPOINT

- Press button ⇕ for at least half second, to display the setpoint value.
- By keeping button ⇕ pressed, use button ▼ or ▲ to set the desired value (adjustment is within the minimum **SPL** and the maximum **SPH** limit).
- When button ⇕ is released, the new value is stored.

HOW TO CHANGE a parameter value

- The setup menu is accessed by pressing button X+i for 5 seconds.
- With button ▼ or ▲ select the parameter to be modified.
- Press button i to display the value.
- By keeping button i pressed, use button ▼ or ▲ to set the desired value.
- When button i is released, the newly programmed value is stored and the following parameter is displayed.
- To exit from the setup, press button X or wait for 30 seconds.

LIST OF PARAMETERS

Here is a list of the parameters the value of which can be changed in the programming mode, as well as their ranges.

Display Symbol	Parameter	Range	Master-Bilt's Setting
SP	Temperature Set Point	SPL…SPH	-10°F or -15°F
HYS	Temperature Differential	1 to 255°F	10°
SPL	Minimum Temperature limit setpoint	-50…SPH	-20°F
SPH	Maximum Temperature limit setpoint	SPH…120°	15°F
AHA	High Temperature alarm	-50…120°	30°F
ALA	Low Temperature Alarm	50…120°	-40F
ATD	Temperature Alarm Delay	0…120min	30min
DFR	Number of Defrost Cycle per 24hr	0…24	4/day
DLI	Defrost Termination Temperature	-50…120°	55°F
DTO	Maximum Defrost Duration	1…120min	30min

ELECTRICAL CONNECTIONS

The controller is provided with screw terminal block to connect cables with a cross section up to 2,5 mm^2. Before connecting cables make sure the power supply complies with the control's requirements. Separate the probe cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay or contactor's.

PROBE CONNECTIONS

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

BLG/TLG CABINET COMPONENT AMP DRAW

ITEM	PART NO.	VOLTAGE RATING	CABINET	AMPS AT 208 VOLTS	AMPS AT 230 VOLTS	NOTES
Coil Defrost Heater	17-09408	230 V	BLG/TLG-48, 52	3.9	4.3	Check Red or Black Leg
Coil Defrost Heater	17-01311	230 V	BLG/TLG-74, 80	6.3	7	Check Red or Black Leg
Condensate Heater		230 V	BLG-48, 52, 74, 80	1.2	1.3	Check Red or Black Leg
Condensate Heater	201I130	230 V	TLG-48, 52, 74, 80	1.2	1.3	Check Red or Black Leg
Door Frame Heater	17-09419	115 V	BLG/TLG-48, 52, 74, 80	.33 ea	.37 ea	Check Black Leg
Door	31-02602	120V	BLG/TLG-48, 74	.55 ea	.60 ea	Check Black Leg
Door	31-02603	120V	BLG/TLG-48	.55 ea	.60 ea	Check Black Leg
Door	31-02604	120V	BLG/TLG-52, 80	.76 ea	.84 ea	Check Black Leg
Door	31-02605	120V	BLG/TLG-52	.76 ea	.84 ea	Check Black Leg
Drain Heater	17-00404	115 V	BLG/TLG-48, 52, 74, 80	0.05	0.06	Check Black Leg

ITEM	PART NO.	VOLTAGE RATING	CABINET	AMPS AT 104 VOLTS	AMPS AT 115 VOLTS	NOTES
Coil Defrost Heater	17-09407	120 V	BLG/TLG-27	4.3	4.8	Check Black Leg
Condensate Heater	A321-130	115 V	BLG-27	2.3	2.6	Check Black Leg
Condensate Heater	323I130	115 V	TLG-27	2.3	2.6	Check Black Leg
Door Frame Heater	17-09419	115 V	BLG/TLG-27	0.33	0.37	Check Black Leg
Door	31-02600	120V	BLG/TLG-27	.81 ea	.90 ea	Check Black Leg
Drain Heater	17-00404	115 V	BLG/TLG-27	0.05	0.06	Check Black Leg

FINAL CHECK LIST

A. Check operating pressures.

B. Check electrical requirements of unit to supply voltage.

C. Set temperature control for desired temperature range.

D. Check sight glass for proper refrigerant charge, if provided.

E. Check system for proper defrost settings and operation.

F. Check condensing unit for vibrating or rubbing tubing. Dampen and clamp as required.

G. All valves should be completely opened counter-clockwise.

H. Check packing nuts on all service valves.

I. Replace all service valve caps and latch unit covers.

J. Check and set the door tension at the Torque Adjustment.

SERVICE INSTRUCTION

1. High head pressure and high back pressure:
    A. Condenser coil clogged or restricted
    B. Condenser fan motor defective.
    C. Air discharge in rear of cabinet restricted.

2. Low back pressure and low head pressure:
    A. Restriction in system.
    B. Refrigerant undercharged.
    C. Leak in system

3. Pressure normal – cabinet warm:
    A. Coil blocked with frost (see #4).
    B. Refrigerant undercharged.
    C. Control set too warm.

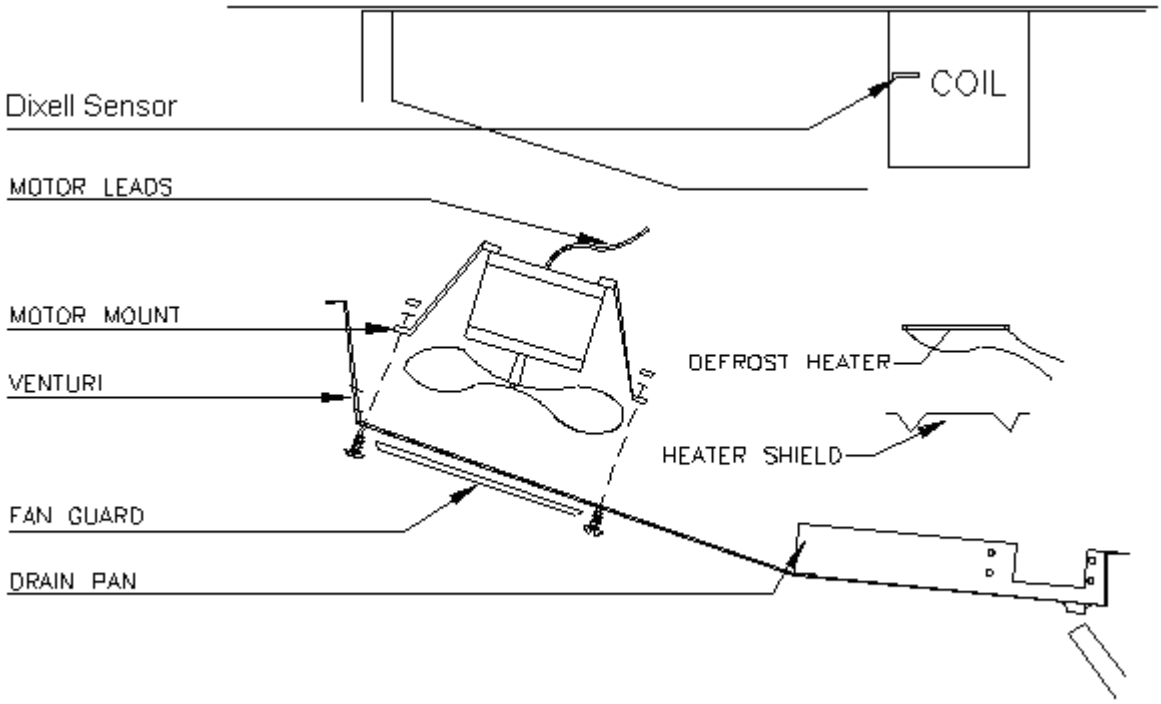
4. Cabinet not cycling – coil blocked with frost:
    A. Defective temperature controller.
    B. Refrigerant overcharged.
    C. Location too hot.
    D. Condenser clogged.
    E. Condenser fan motor defective.
    F. Defrost heater not operating.

5. Copressor starts and runs – but cycles on overload:
    A. Low voltage
    B. Relay defective.
    C. Overload defective.
    D. High head pressure (see #1).

Temperature sensor, defrost heater and fan motor replacement

Before making any change, technician should:

1. Disconnect power to the cabinet
2. Remove screws from venturi and pull down



To change a temperature sensor (cabinet zone sensor or defrost termination sensor), simply disconnect the sensor wires from the controller and replace the new sensor in the original position. Use plastic tie to tighten the zone sensor. Insert the sensor for defrost termination firmly into the evaporator coil, in between the fins. Make sure the sensor wires do not touch or are not close to any heater rods.

To change defrost heater – remove screws from drain pan and pull down – remove screws from coil mounting straps – spring straps open – remove heater shield – pull heater out of slots in coil fins.

To change fan motor – disconnect fan motor leads – remove screws from fan guards and motor mounts.

MASTER-BILT PART LIST

The table below gives Master-Bilt part numbers. Use this chart when ordering replacement parts for your **BLG/TLG** cabinets. Always Advise Cabinet Serial Number When Ordering Parts

Description	BLG12HD	BLG/TLG 27HD	BLG/TLG 48HD	BLG/TLG 52HD	BLG/TLG 74HD	BLG/TLG 80HD
Ballast	23-01717	23-01717	23-01717	23-01717	23-01717	23-01717
Bulb	-	23-01716	23-01716	23-01716	23-01716	23-01716
Bulb Holder Bottom	23-01698	23-01698	23-01698	23-01698	23-01698	23-01698
Bulb Holder Top	23-01699	23-01699	23-01699	23-01699	23-01699	23-01699
Bulb Shield Inner	23-01464	23-01464	23-01464	23-01464	23-01464	23-01464
Bulb Shield Outer	25-01311	25-01311	25-01311	25-01311	25-01311	25-01311
Coil Defrost Heater	17-09407	17-09407	17-09408	17-09408	17-01311	17-01311
Compressor	03-14799	03-14799	03-14968	03-14968	03-14973	03-14973
Compressor Contactor	19-13936	19-13936	19-13934	19-13934	19-13934	19-13934
Compressor Relay	-	-	03-14980	03-14980	03-14977	03-14977
Compressor Run Capacitor	-	-	03-14978	03-14978	03-14975	03-14975
Compressor Start Capacitor	-	-	03-14979	03-14979	03-14976	03-14976
Compressor Switch	19-13118	19-13118	19-13118	19-13118	19-13118	19-13118
Condensate Heater “TLG”	17-00399	17-00399	17-09412	17-09412	17-09412	17-09412
Condensate Heater Electric, TLG	323I130	323I130	323I130	323I130	323I130	323I130
Condensate Heater, BLG Electric (Optional)	A321-130	A321-130	17-00421	17-00421	17-00421	17-00421
Condenser Coil	07-13391	07-13391	07-13090	07-13090	07-13090	07-13090
Condenser Fan Blade	15-13093	15-13093	15-13093	15-13093	15-13093	15-13093
Condenser Fan Motor	13-00311	13-00311	13-01283	13-01283	13-01283	13-01283
Door Frame Heater	17-09419	17-09419	17-09419	17-09419	17-09419	17-09419
Door-L.H. (Black)	-	31-03600	31-03602	31-03604	31-03602	31-03604
Door-R.H.	-	-	31-03603	31-03605	-	-
BLG Curve Door	-	-	31-03174	31-03176	31-03178	-
BLG Curve Door Frame	-	-	31-03182	31-03184	31-03186	-
Drain Heater	17-00404	17-00404	17-00404	17-00404	17-00404	17-00404
Drier	09-09171	09-09171	09-09711	09-09711	09-09711	09-09711
Evaporator Coil	07-13288	07-13288	07-13289	07-13289	07-13290	07-13290
Evaporator Fan Blade	15-13106	15-13106	15-13106	15-13106	15-13106	15-13106
Evaporator Fan Guard	25-01324	25-01324	25-01324	25-01324	25-01324	25-01324
Evaporator Fan Motor	13-13181	13-13181	13-13182	13-13182	13-13182	13-13182
Expansion Valve	09-09825	09-09825	09-09758	09-09758	09-09759	09-09759
Female Door Plug	21-00568	21-00568	21-00568	21-00568	21-00568	21-00568
Female Plug	21-00577	21-00577	21-00577	21-00577	21-00577	21-00577
Front Control	19-13897	19-13897	19-13897	19-13897	19-13897	19-13897
Heater Safety Control	19-01164	19-01164	19-01164	19-01164	19-01164	19-01164
Leg (TLG only)	27-00558	27-00558	27-00558	27-00558	27-00558	27-00558
Leg Leveler	27-00592	27-00592	27-00592	27-00592	27-00592	27-00592
Light Switch	23-50793	23-50793	23-50793	23-50793	23-50793	23-50793
Electronic control	19-14243	19-14243	19-14243	19-14243	19-14243	19-14243
Cabinet Temperature sensor	19-14244	19-14244	19-14244	19-14244	19-14244	19-14244
Defrost Termination Sensor	19-14245	19-14245	19-14245	19-14245	19-14245	19-14245
Terminal Block	-	-	19-01091	19-01091	19-01091	19-01091

Accessories (Includes HD Models)

	BLG/TLG	BLG/TLG	BLG/TLG	BLG/TLG	BLG/TLG	BLG/TLG
Description	**12HD**	**27HD**	**48HD**	**52HD**	**74HD**	**80HD**
Baskets (Cantilever) 20" X 22" X 5"			33-01458		33-01458	
Baskets(Conventional) 22"X 22-3/4"X 5"			33-01419		33-01419	
Baskets(Conventional) 24-3/4"X22"X5"				33-01376		33-01376
Casters (4) 3" Diameter	A20011140	A20011140	A200-11140	A200-11140		
Casters (6) 3" Diameter					A212-11140	A212-11140
Legs 6"	A20011170	A20011170	A200-11170	A200-11170	A212-11170	A212-11170
Shelves (Cantilever)	33-01586	33-01473	33-01474	33-01475	33-01474	33-01475
Shelve, Bottom		33-01402	33-01453	33-01448	33-01453	33-01448
Shelving Clips (4)	33-01011	33-01011	33-01011	33-01011	33-01011	33-01011

SALE AND DISPOSAL

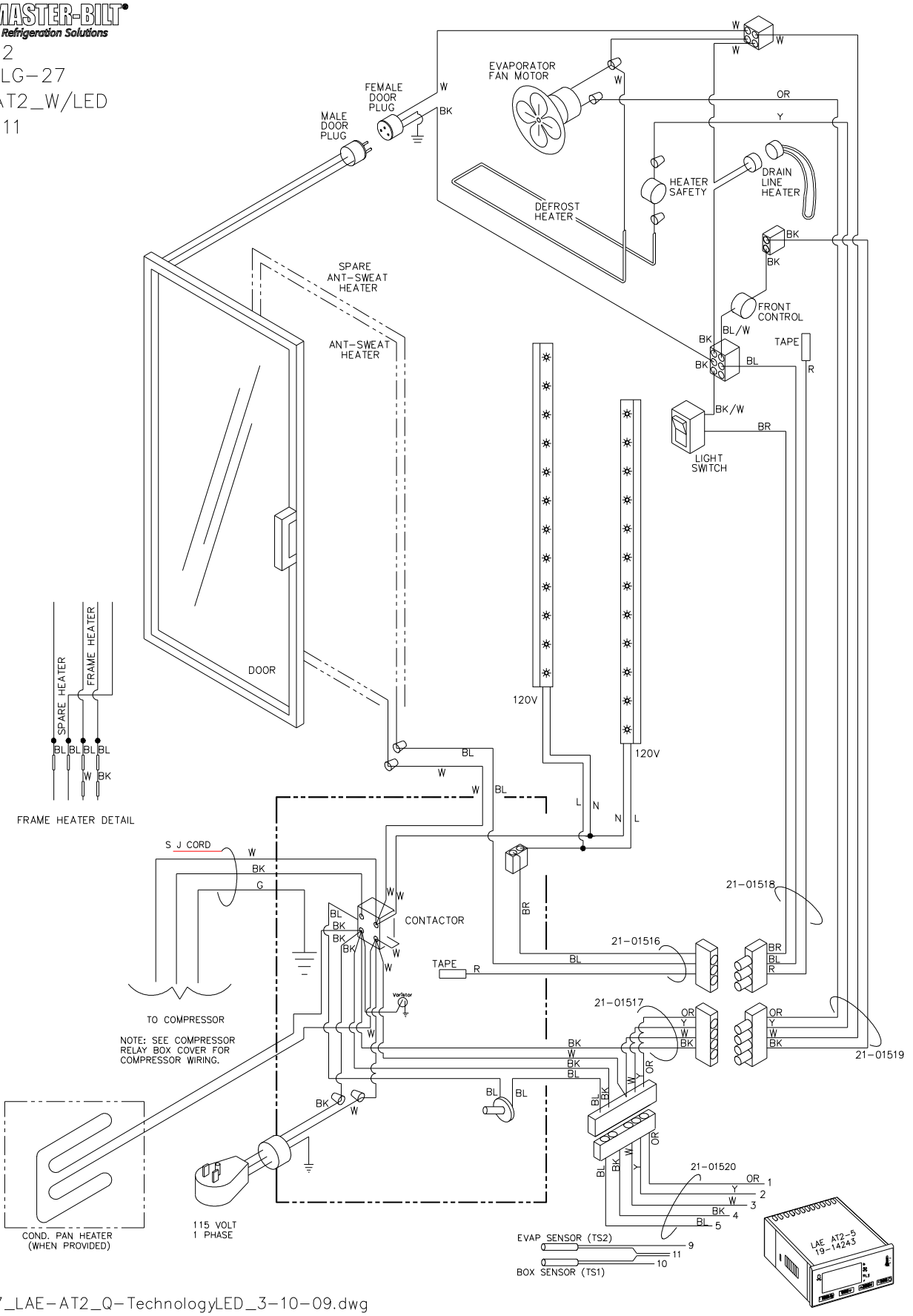
OWNER RESPONSIBILITY

If you sell or give away your Master-Bilt cabinet you must make sure that all safety labels and the Installation - Service Manual are included with it. If you need replacement labels or manuals, Master-Bilt will provide them free. Contact the customer service department at Master-Bilt at (800) 684-8988.

The customer service department at Master-Bilt should be contacted at the time of sale or disposal of your cabinet so records may be kept of its new location.

MASTER-BILT Refrigeration Solutions

BLG–12
BLG/TLG–27
LAE–AT2_W/LED
1–13–11



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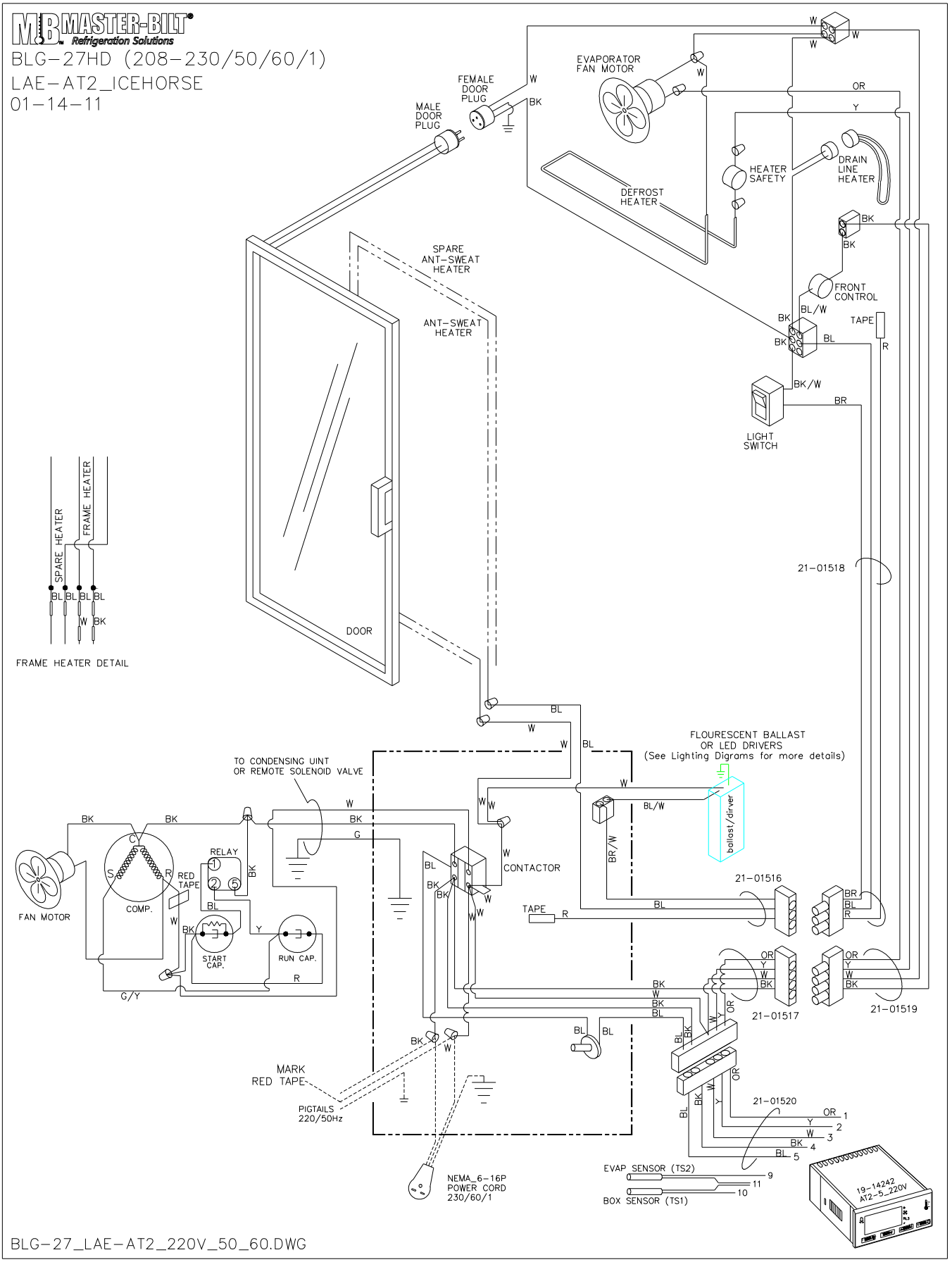
MASTER-BILT
Refrigeration Solutions

BLG-27HD (208-230/50/60/1)
LAE-AT2_ICEHORSE
01-14-11



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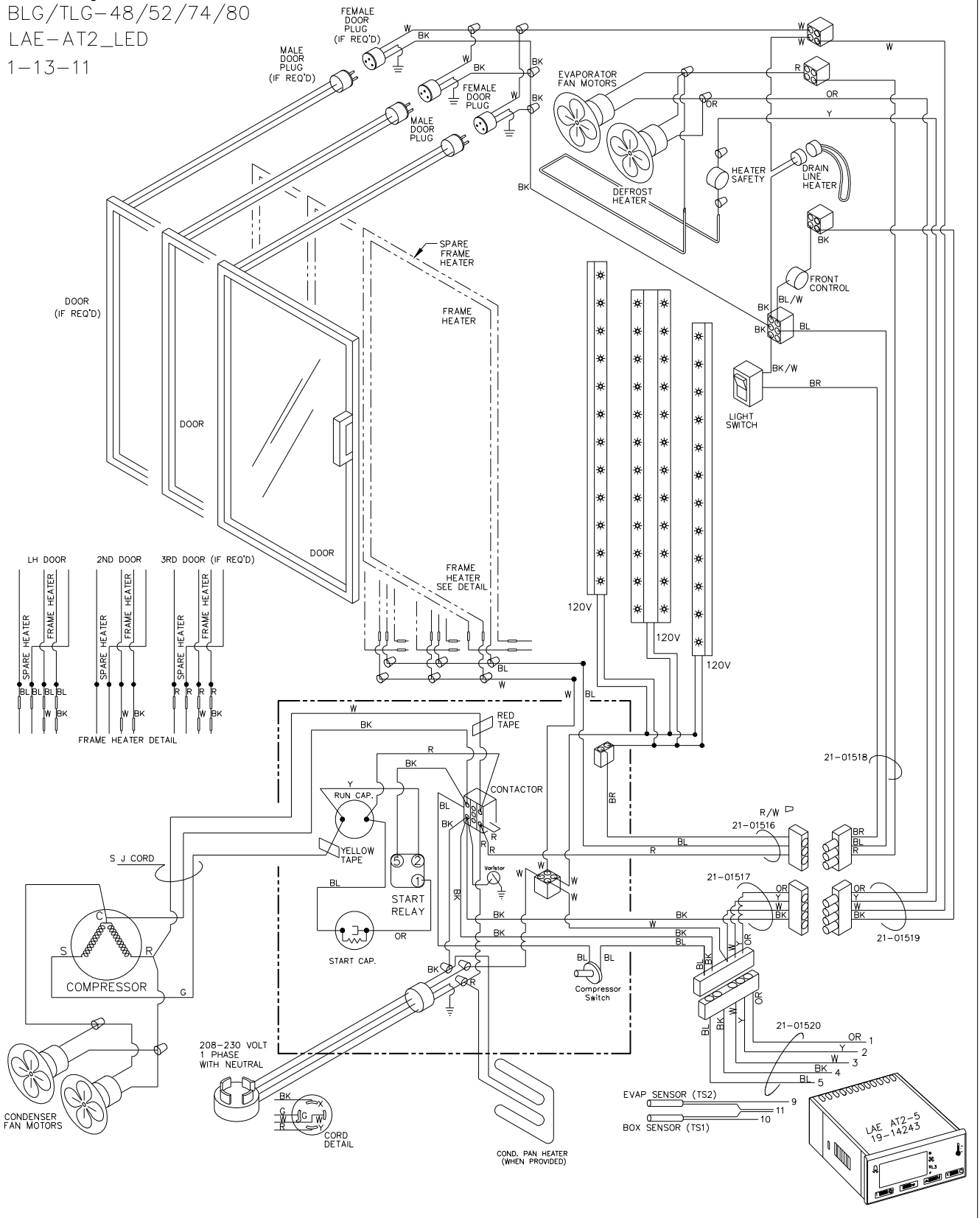
MASTER-BILT
Refrigeration Solutions

BLG/TLG-48/52/74/80
LAE-AT2_LED
1-13-11



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MASTER-BILT
Refrigeration Solutions

BLG–48R/52R/74R/80R
LAE–AT2_Q–Technology
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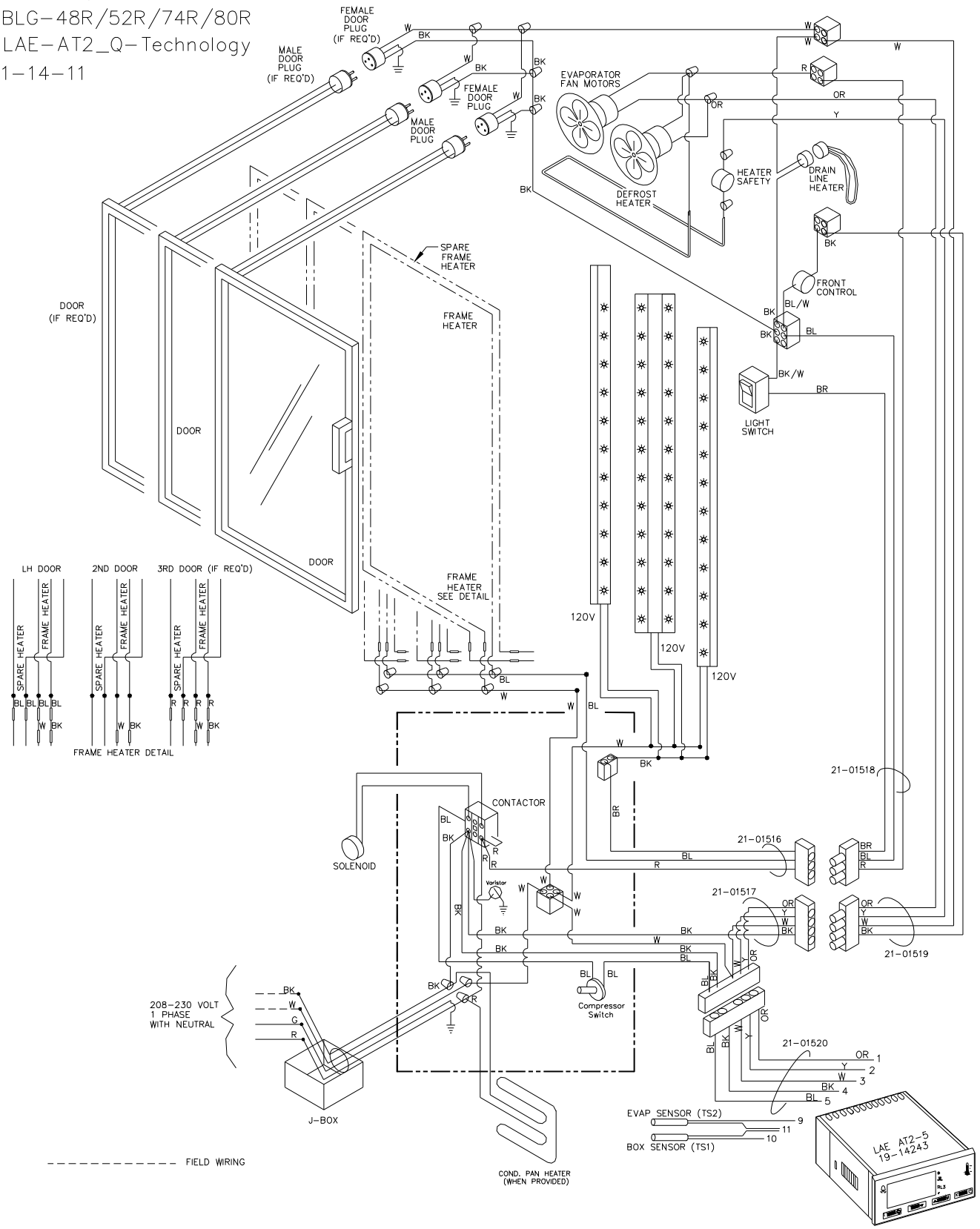

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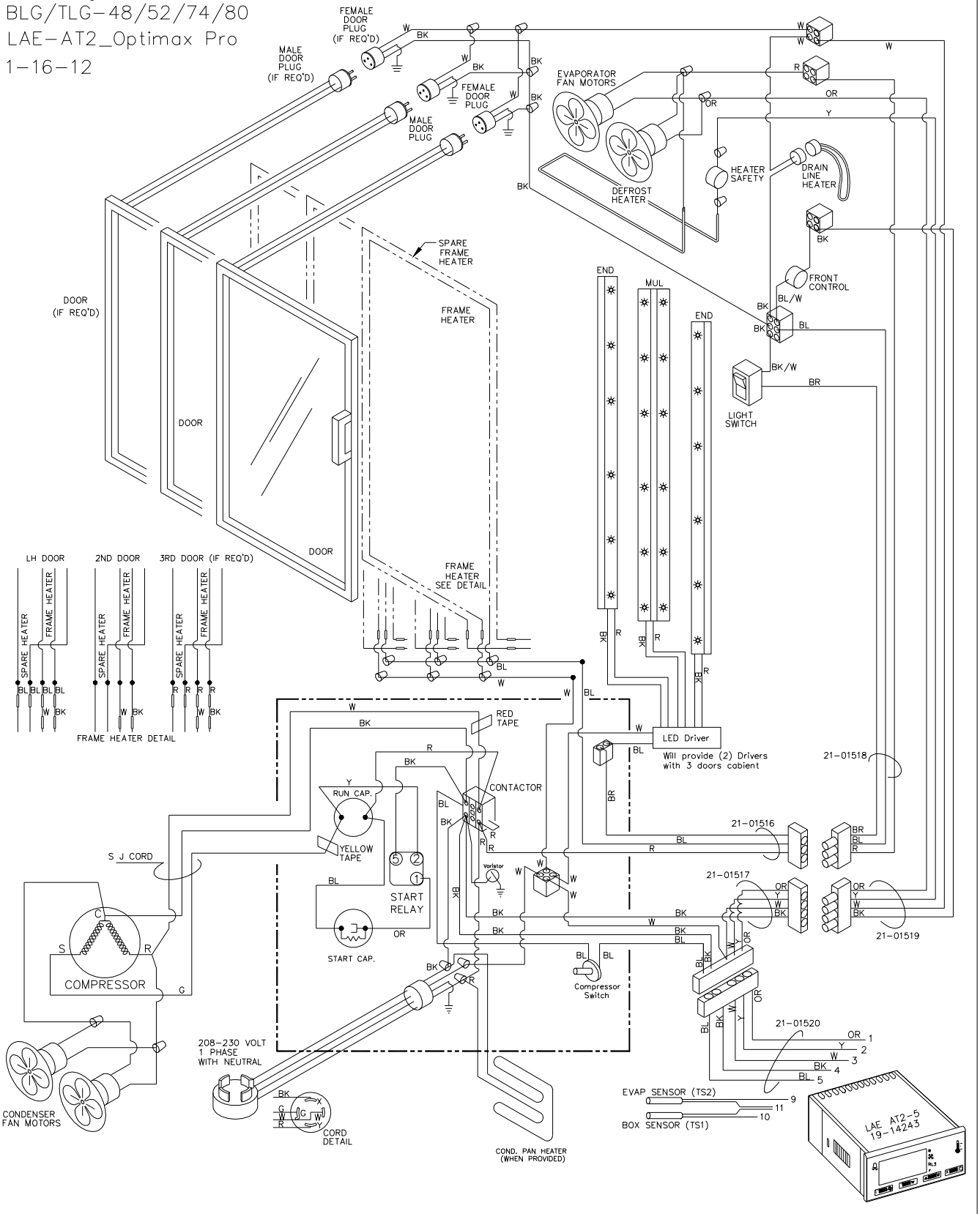
MASTER-BILT Refrigeration Solutions

BLG/TLG-48/52/74/80
LAE-AT2_Optimax Pro
1-16-12



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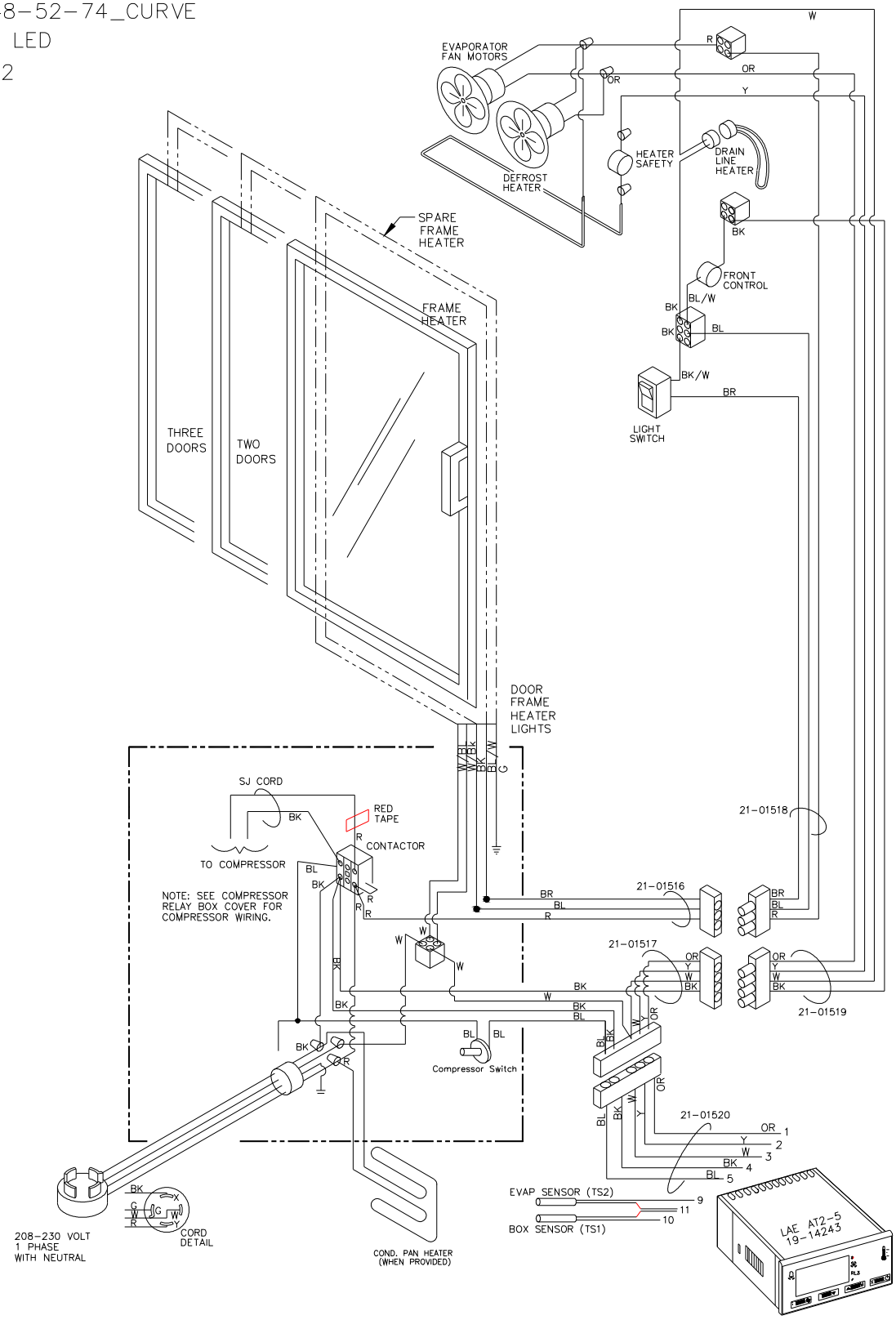
MASTER-BILT Refrigeration Solutions

BLG-48-52-74_CURVE

LAE / LED

1-3-12



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